CRED

Center for Research on Environmental Disease

Leadership

- David Johnson, PhD
  Director
- Michael MacLeod, PhD
  Deputy Director
- Melissa Bondy, PhD
  Associate Director
- John Richburg, PhD
  Associate Director

In this Issue

Spring 2011

Last year was a time of significant change and disruption for the Center for Research on Environmental Disease (CRED) and many of its members. As you know, over a year ago Dr. DiGiovanni stepped down as Center Director and moved his laboratory from Science Park to the Dell Pediatric Research Institute (DPRI). Dr. DiGiovanni established the CRED in 1996 and built it into one of the premier NIEHS Core Centers in the country. Dr. DiGiovanni's outstanding leadership allowed the CRED to flourish - meeting and exceeding the Center goals of providing an intellectual platform and cutting edge resources that foster innovation and multidisciplinary collaboration in environmental health-related research. I want to thank Dr. DiGiovanni once again for all his efforts and I am pleased that he will continue to be an important part of the CRED.

I also want to thank Dr. Michael MacLeod for stepping up to direct the CRED last year. The retreats Dr. MacLeod organized and led were critical for responding to the immediate needs of the Center and planning for the future. These retreats allowed members from each of the affiliated institutions to provide input into the reorganization and future directions of the Center. Thanks to everyone who participated in these retreats and subcommittees. It will be my goal to implement the shared vision of the Center that emerged from these retreats and subcommittee work. Dr. MacLeod has now resumed his role as Deputy Director and will continue to help oversee the operations of the Facility Cores and the Pilot Project Program.

Anumber of other important changes to the Center and its affiliated departments have also occurred over the last year, including several new additions and relocations. At UT MD Anderson, the Departments of Molecular Carcinogenesis and Epidemiology have new Chairs in Dr. Sharon Dent and Dr. Xifeng Wu. Dr. Dent has become a new Center member and her profile, as well as the profiles of other new members, can be found inside this newsletter. Drs. Karen Vasquez and Michelle Forman have relocated to the DPRI to join Dr. DiGiovanni and other Center members from UT Austin. There will likely be additional moves by Center members in the near future but I am sure that many of the strong collaborations that have been established over the years through the CRED will be maintained.

In this newsletter we unveil the new CRED logo, which was designed to represent the synergy that stems from the multi-campus structure and various scientific strengths that the Center combines that lead to increased research productivity and creativity. I would also like to introduce the new Center goals and Research Themes from the renewal application submitted in February that follow on the next page. There are also articles on the newly redesigned Integrated Imaging, Pathology, and Histology Facility Core directed by Dr. Donna Kusewitt and the addition of Dr. Colleen Jeter as manager of the Ziess LSM510 META laser–scanning (confocal) microscope, which is part of the Cell and Tissue Analysis Facility Core. A new Protein Domain Microarray Facility Core, directed by Dr. Mark Bedford, is also highlighted. The confocal microscope service and the Protein Domain Microarray Facility Core are supported by the MD Anderson Institute for Basic Sciences Center for Environmental and Molecular Carcinogenesis in partnership with the CRED. I also encourage you to read about our new CRED members, highlights of grants and other awards, and a spotlight on the upcoming summer programs directed by the Community Outreach and Education Core.

The competitive renewal goes out

On February 24th, the 420 page competitive renewal was successfully submitted to NIEHS. Many thanks go out to those who contributed time and effort to this grant submission. While many of the Center's goals and programs remain consistent with the previous grant cycle there are also some notable changes. The goals of the Center for the next period are:

Maintain and enhance research strengths in current areas of excellence: mechanisms of carcinogenesis, DNA repair, energy balance, molecular epidemiology, toxicology, and mouse modeling.

Building on the CRED's current expertise in epigenomics, develop a premier environmental epigenetics research program with a focus on how early life exposures to environmental toxicants alter epigenetic programming and how chromatin modifications participate in the response to genotoxic agents.

Increase collaborative interactions between basic scientists and clinical researchers and promote translational research through the use of the Integrative Health Science Facility Core.

Continue to provide effective, bidirectional community outreach and engagement programs for environmental health science and disease prevention, targeting the underserved public and specific target populations related to Center research activities.

Strengthen the CRED's ability to attract and assist junior investigators in establishing independent careers related to environmental health sciences through a refocused Career Development and Mentoring Program.

Out with RFAs...hello Research Themes

The unifying theme of the Center is to define how genetic, epigenetic and dietary factors influence host responses to environmental exposures to impact human heath and disease. This theme incorporates the four major research themes and relates to a variety of environmentally related diseases. Starting in the next funding period, Research Focus Areas will be reorganized into Research Themes, with the hope that this structure will better facilitate collaborative interactions. The move to a Research Theme-based organization for the CRED was prompted by the fact that research from individual CRED investigators is often related to more than one theme, making it difficult to pigeon-hole an investigator into a single research focus group. In addition, while the CRED maintains strength in the area of environmental carcinogenesis, our research in other environmental diseases has expanded over the last five years to include research on obesity, diabetes, birth defects, asthma, and cardiovascular disease. The Center will bring an interdisciplinary approach to research efforts in four major Research Themes:

Epigenetics and Early Life Exposures (Facilitator: Cheryl Walker)
Genetics and Genome Stability (Facilitator: Karen Vasquez)
Energy Balance and Metabolism (Facilitator: Steve Hursting)
Cellular Responses to Environmental Toxicants (Facilitator: John Richburg)

Each Research Theme is represented by a facilitator who serves on the Internal Advisory Board. The facilitator will promote collaborative and innovative research by organizing theme-related symposia, retreats and workshops. The facilitator will also host CRED-sponsored seminar speakers related to their research theme, keep abreast of and respond to funding opportunities for multi-investigator grants, and respond to calls for community outreach. **A benefit of this new system is that members are no longer required to be statically affiliated with an single Research Focus Area, instead current research projects will dictate Research Theme affiliation that can change as a research program takes on a new direction.**

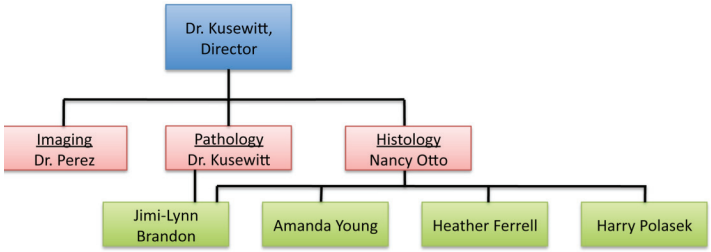
New & Improved Facility Cores

Integrated Imaging, Pathology and Histology Facility Core

IIPH a new comprehensive core

Directed by Donna Kusewitt

Mouse models have been important tools for many CRED researchers, and developing new mouse models of human disease has been a major strength of the Center. This area of strength is greatly enhanced by the excellent facilities available to CRED researchers, such as the CRED Histology and Tissue Processing Facility Core. After 25 years of service at Science Park, Dr. Irma Gimenez-Conti has retired as supervisor of the Histology and Tissue Processing Facility Core. During the last funding period, an expert mouse pathologist, Dr. Donna Kusewitt, was added to the CRED to further expand its mouse model resources. Dr. Kusewitt is a board-certified veterinary pathologist with over 25 years of experience working with animal models of human disease. For the last 11 years, she has specialized in working with standard and genetically engineered mouse models and is very experienced in developing and validating immunohistochemical techniques for use in mice. Dr. Kusewitt was previously the Director of the Mutant Mouse Pathology Service at Ohio State University and has now set up a similar core at Science Park. The Mutant Mouse Pathology Service, an MD Anderson Cancer Center Support grant core, has been combined with the Histology and Tissue Processing Facility Core to create a comprehensive Integrated Imaging, Pathology and Histology Facility Core (IIPHFC) that is directed by Dr. Kusewitt. Since joining Science Park in 2007, Dr Kusewitt has expanded the capabilities of the Mutant Mouse Pathology Service to include laser capture microdissection, virtual slide preparation, and morphometric slide analysis, all of which are now available to center members. IIPHFC will provide Center members pathology, imaging and histology services. To continue to enhance services, Dr Kusewitt has submitted a shared instrumentation grant for an IVIS Spectrum optical imaging system, which is a state-of-the-art instrument that performs bioluminescent and fluorescent imaging of experimental mice. This unique combination of imaging capabilities allows the behavior of engrafted and autochthonous tissues to be monitored in vivo, in a sensitive and quantitative fashion. For the convenience of investigators, Dr. Kusewitt has set up a shared resource area that includes two multiheaded microscopes, a digital dissection microscope, a dedicated PC workstation for morphometric analysis of virtual slides, and a necropsy workstation. Additionally, the IIPHFC continues to add new antibodies to the immunohistochemical service at the request of Center members. At present this service has over 300 antibody staining protocols optimized for mouse or human tissues. For more information regarding pathology services contact Donna Kusewitt, for imaging services Carlos Perez, and for histology services Nancy Otto.



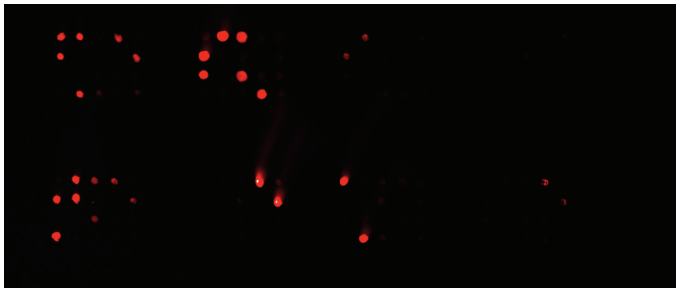
Protein Domain Microarray Core

Using protein domain microarrays to identify phospho- and methyl-dependent protein-protein interactions

Directed by Mark Bedford

The Center for Environmental and Molecular Carcinogenesis has established a new core facility that will allow investigators to identify novel protein-protein interactions, in particular interactions that are driven by posttranslational modifications. For cells to survive, differentiate, and grow, information has to be transferred from the cell surface to the nucleus. This process is referred to as signal transduction. A hallmark of cancer is the deregulation of signal transduction pathways. Signaling events in eukaryotic cells involve the assembly and disassembly of large protein-protein complexes. These diverse associations are mediated through interactions of a limited number of modular signaling units or protein-domains. Protein interactions involving domains are often regulated by post-translational modification (PTM – like phosphorylation, methylation and acetylation) of the smaller protein motif within the

ligand. We have developed a chip-size protein microarray that harbors a display of over 300 modular protein-interacting domains including SH2, SH3, PDZ, FHA, 14-3-3, WW, Chromo, Tudor, PHD and MBT domains.



In the emerging proteomic era, it is becoming easier to identify proteins using tryptic digestion followed by mass spectrometric approaches. These same methods also detect sites of posttranslational modification on proteins. Many of these posttranslational modifications likely generate docking sites for protein modules. Using our protein-domain microarray technology we can help investigators identify proteins that can interact with motifs that are either methylated or phosphorylated. This high-throughput approach facilitates the rapid identification of protein-protein interactions *in vitro*. Further *in vivo* studies are needed to confirm that these interactions do indeed occur in biological systems.

Protein domains are cloned into a GST expression vector, and recombinant protein is produced in bacteria. These fusion proteins are then arrayed onto nitrocellulose coated glass slides using a robot. These slides are probed with biotinylated peptides that are pre-conjugated to streptavidin-Cy3. The peptides used in this experiment are synthesized as 15 mers, and both the modified and unmodified forms of the peptides are tested on the array. In this manner, we can identify novel methyl- and phospho-dependent interactions.

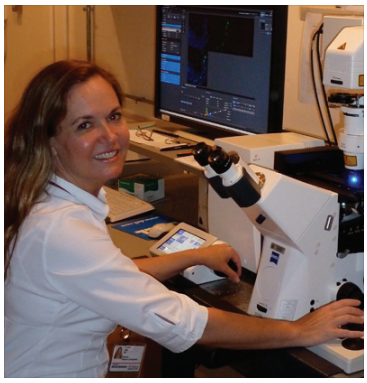
We have built three types of arrays:
1) A phospho-tyrosine reader harbors 70 SH2 domains and 5 PTB domains (total = 75 domains).

2) A phospho-threonine/serine reader that harbors 7 14-3-3 domains, 5 FHA domains, 15 BRCT domains and a WW domain (total = 28 domains).

3) An epigenetic reading array that harbors methyl and acetyl readers. This array is composed of 50 tudor domains, 22 bromo domains, 36 PHD domains, 17 MBT domains, 11 WD40 domains, 9 SANT domains, 28 chromo domains, 15 PWWP domains, 5 BRK domains, 5 CW domains, and 9 Ank repeats (total = 207 domains).

More and more posttranslational modifications are being discovered on proteins. The roles of many of these methylation and phosphorylation events often remain obscure. This approach provides an easy way for a researcher to identify potential binding partners for their favorite proteins. These arrays thus offer researchers tools to get at the “mechanism”. Once investigators know that they are working with a clearly functional PTM, they can proceed with confidence to generate modification specific antibodies and interrogate the signaling pathway that is engaged by the identified PTM-driven protein-protein interaction.

Collene Jeter, PhD is now manager of the Zeiss LSM510 META laser-scanning microscope, which is a component of the Cell and Tissue Analysis Facility Core.



The Zeiss is equipped with four separate lasers (Argon-351/364, Diode-405, HeNe-543 and HeNi-633) and four simultaneous detection channels, allowing excitation and emission detection of a broad range of fluorophores. The LSM510 META scanning module is attached to the inverted Axio Observer microscope with a full range of objectives, including a high magnification 63X oil-immersion lens. The principal advantages of using confocal microscopy over standard epifluorescence microscopy are the significantly improved resolution, multispectral fluorescence imaging capabilities and Z-stack (3D) imaging. Dr. Jeter has trained with confocal experts from UT Austin and Zeiss and further advanced training is planned in the near future. Downtime for the confocal microscope is anticipated this summer during relocation to Lab 3, concurrently with an upgrade of the operating system. The exact time frame of the move has not yet been determined. If you are interested in confocal microscopy, please contact Dr. Jeter by e-mail (cjeter@mdanderson.org) or phone (512-237-6491) to schedule an appointment.

Welcome New Center Members!!!

Sharon Dent PhD

UT MD Anderson Science Park

Since August 2010, Sharon Dent, PhD has been the Chair of the Department of Molecular Carcinogenesis and Director of the Science Park. Dr. Dent is a native Texan, growing up in the Dallas area. She earned her bachelors degree from North Texas State University in Biochemistry, followed by her doctorate from Rice University, also in Biochemistry. She continued her training at Baylor College of Medicine as a postdoctoral fellow with Dr. David Allis. Dr. Dent then spent five years at the NIH as a Senior Staff Fellow, but returned to Texas upon accepting an Assistant Professor position in the Department of Biochemistry and Molecular Biology at MD Anderson in 1993. From 2007-2010, she served as Deputy Chair of the Department of Biochemistry and Molecular Biology. She continues to serve as the Co-Director for the Center for Cancer Epigenetics, as well as the MD Anderson DNA Analysis Facility. She has published almost 60 peer-reviewed original research articles, and close to 20 invited articles. She is currently on the editorial boards of Molecular and Cellular Biology and Molecular Cell and recently completed a 5-year term on the editorial board of the Journal of Biological Chemistry. Dr. Dent also has extensive experience on grant review panels, and she chaired the Molecular Genetics C study section at the NIH from 2007-2009. Her research centers around the role of chromatin modifying enzymes and is divided into three main projects:

1) Defining the functions of the Gcn5 acetyltransferase during mouse development.

2) Defining regulatory cross-talk between methylation, acetylation, and phosphorylation events in histone and non-histone proteins.

3) Defining epigenetic changes in differentiating cells.

Future research endeavors will be directed towards understanding how environmental factors influence epigenetic programs.

Richard Finnell PhD

UT Austin

Dr. Finnell is a Professor in the Department of Nutritional Sciences at UT Austin, and serves as the Director of Genomic Research at Dell Children's Medical Center He is currently completing a term on the National Advisory Environmental Health Sciences Council. Dr. Finnell earned a bachelors degree from the University of Oregon in Anthropology, a masters degree in Medical Genetics from the University of British Columbia and a PhD in Medical Genetics from the University of Oregon Medical School. Dr. Finnell completed a post-doctoral fellowship in Neurogenetics at the Neurological Sciences Institute, Good Samaritan Hospital, Portland, Oregon and a second fellowship in Embryology at the Anatomische Institute, Universitat Zurich, Switzerland, prior to assuming a faculty position at Washington State University College of Veterinary Medicine. Dr. Finnell joined UT Austin after spending almost 20 years in the Texas A&M University System, most recently as the Margaret M. Alkek Professor of Medical Genetics and Director of the Institute of Biosciences and Technology. Dr. Finnell was the founding director and CEO of the Texas Institute for Genomic Medicine. He has published over 245 peer-reviewed articles on genetic and environmental risks of common birth defects and is an expert in developing transgenic mouse models. Dr. Finnell is also an adept scientific leader, which is evidenced by the multiple leadership roles he has held on NIH program project grants and as Director of three institutes. Dr. Finnell's research program examines the interaction between specific genes and environmental toxins as they influence normal embryonic development. He performs both population based human molecular epidemiology studies, as well as develops novel mouse models that mimic human disease. Most recently his laboratory has focused its efforts on folate transport as it relates to neural tube and other congenital defects.

Guojun Li MD PhD

UT MD Anderson

Dr. Li is an Assistant Professor of Head and Neck Surgery and Epidemiology at the UT MD Anderson Cancer Center. He received his MD from the Tongji Medical University and earned a MS in Food and Biomedical nutrition from the North Dakota State University. He continued his training at the University of Texas at Houston, School of Public Health where he obtained a PhD in Molecular Epidemiology and Cancer Chemoprevention. Dr. Li completed his post-doctoral fellowship with Drs. Qingyi Wei, Margaret Spitz, and Scott Lippman at UT MD Anderson Cancer Center, which was funded by an NCI R25 fellowship. In 2008, Dr Li received a K07 Career Development Award and an R03 from the NIH to study interactions between HPV16 infection and genetic polymorphisms in cell cycle, apoptosis, and inflammation related genes. Dr. Li has developed an active and productive translational research program that focuses on cancer treatment, early detection and prevention of head and neck cancers. Since 2008, Dr. Li has been highly productive and has published 27 papers, including 17 as a senior author. He combines his molecular expertise with his epidemiological skills and approaches to identify biomarkers and to use these biomarkers to identify subgroups at high-risk for cancer prevention and prediction of clinical outcomes. Dr. Li has studied the role of human papillomavirus in head and neck cancer and confirmed the importance of HPV16 as a risk factor for oropharyngeal cancer in our patient population. Ongoing work has identified sexual practices, the major exposure differences, and socioeconomic differences between oropharyngeal (HPV-associated) cancers and non-oropharyngeal cancers. Dr. Li has led research directed toward identifying potential genetic risk factors for HPV-associated malignancies. Most recently, Dr. Li has expanded his research to explore novel ways to predict second primary risk to understand genetic susceptibility and risk of second primary malignancies in patients with index squamous cell cancer of the head and neck.

Michael Mancini PhD

Baylor College of Medicine

Michael A. Mancini, PhD is an Associate Professor in the Department of Molecular and Cellular Biology and Director of the Integrated Microscopy Core at Baylor College of Medicine. Dr Mancini earned a bachelors degree from Oakland University in Medical Technology and a PhD from the University of Texas Health Science Center at San Antonio in Cell and Structural Biology. To continue his training in molecular cell biology and imaging-based research, he then completed a postdoctoral fellowship at The University of Texas Institute of Biotechnology then joined the faculty at Baylor College of Medicine in 1995. He has published over 70 peer-reviewed articles and has served as a reviewer for numerous journals and study sections. In addition to his work at Baylor he also co-founded and co-chairs the John S. Dunn Gulf Coast Consortium for Chemical Genomics, recently funded as a State-wide academic screening resource by CPRIT. He also serves as a scientific advisor to multiple imaging hardware and software companies supporting the development of high content analysis approaches for single cell-based analyses. His laboratory has pioneered several live and fixed cell models of nuclear receptor gene regulation, including efforts in breast and prostate cancer, and adipogenesis. In addition to his own research ventures he supports several dozen investigators associated with the Dan L. Duncan Cancer Center at Baylor College of Medicine.

Center Member News

Maria Person is awarded a CPRIT Shared Instrument grant for a LTQ Orbitrap Velos Mass Spectrometer The Protein and Metabolite Analysis Facility, led by Maria Person has been awarded a $1.3 million CPRIT grant for the acquisition of a Thermo LTQ Orbitrap Velos Mass Spectrometer, combining FT-MS high mass resolution with the fastest and most sensitive ion trap platform available. It can identify 1000 proteins in a single run with sub-femtomole sensitivity and supports multiple quantitation methodologies, the best choice for proteomics experiments. The instrument will provide high sensitivity, high throughput protein identification, quantitative proteomics and post-translational modification analysis. This instrument will facilitate projects grouped into three major areas:

1) Immune response based approaches to cancer treatment;
2) Modulating DNA damage pathways and chromatin structure;
3) Identifying targets for cancer prevention, diagnosis and treatment.

Using biochemical, cell culture, mouse model and human samples, and working on heterogeneous population analyses while drilling down to the molecular level to characterize functional complexes, critical modifications, and potent inhibitors and activators, will expedite translation of discovery into treatment. CRED collaborators affiliated with the grant are John DiGiovanni and Casey Wright from UT Austin, Donghui Li from MD Anderson-Houston and Mark Bedford, Gary Johanning, David Johnson, Donna Kusewitt, Snow Shen, Dean Tang, and Richard Wood from MD Anderson-Science Park. Investigators will benefit from higher sensitivity and throughput in protein identification analyses, more options for quantitative proteomics, and higher sensitivity and better site determination in modification analyses.

Sharon Dent is awarded a CPRIT Multi-Investigator grant to establish the LONESTAR network to combat breast cancer The $12.7 million CPRIT grant was awarded to establish the Lonestar Oncology Network for EpigeneticS Therapy And Research (LONESTAR), which aims to leverage the expertise of researchers in Texas to address the important problem of defining epigenetic states important in driving breast cancer formation. The overall aims of our LONESTAR project are:

1. To define the epigenomes and the corresponding transcriptomes of intrinsic breast cancer subtypes in order to identify novel biomarkers and new therapeutic targets (Directed by Sharon Dent).
2. To define the molecular basis and functional consequences of breast cancer-related epigenetic signatures in estrogen responses, cancer formation, and progression (Directed by Dr. Michelle Barton).
3. To determine how changes in epigenetic signatures are related to prevention of reoccurrence after hormone based therapies (Directed by Dr. Orla Conneely).

The Aims provide the framework for three highly interactive projects, which will be supported by three cores: Tissue Culture, Mouse Models, and Bioinformatics. This network will be composed of a 'dream team' of established researchers known for their work in the areas of breast cancer, histone modifications, transcription factor biochemistry, hormone responses, and signaling pathways.

Project Members include:
UT MD Anderson: Sharon Dent, Mark Bedford, Michelle Barton, Xiaobing Shi, Khandan Keyomarsi
UT Southwestern: W. Lee Kraus, Cheng-Ming Chiang
Baylor College of Medicine: Orla Conneely, Ming-Jer Tsai, Wei Li

Cheryl Walker is awarded the PNAS Cozzarelli Prize A ground breaking paper, "ATM signals to TSC2 in the cytoplasm to regulate mTORC1 in response to ROS" by Angela Alexander, Sheng-Li Cai and Cheryl Walker published in the Proceedings of the National Academy of the Sciences has been chosen for the Cozzarelli Prize as the best paper in the Biological Science category for 2010. These prizes are given to the top paper in six categories out of more than 3,700 studies published by PNAS each year. "The Cozzarelli Prize is wonderful recognition of research that brought to light a brand new aspect of cell biology and marked a new direction for our lab," says Dr. Walker. "Discovery of ATM's additional anti-tumor role is the type of basic science research that heightens our understanding of cancer and paves the way for improved prevention and treatment," says Raymond DuBois, MD, PhD, Provost and Executive Vice President. "The Cozzarelli Prize is a great honor for Cheryl, her lab and MD Anderson." The annual Cozzarelli award acknowledges recently published papers that reflect scientific excellence and originality. The award was established in 2005 and named the Cozzarelli Prize in 2007 to honor late PNAS Editor-in-Chief Nicholas R. Cozzarelli. The 2010 awards were presented at the PNAS Editorial Board Meeting, and awardees were recognized at the awards ceremony during the National Academy of Sciences Annual Meeting on May 1, 2011 in National Harbor, MD.

Dean Tang finds that miR-34a inhibits prostate cancer stem cells by suppressing CD44 In their recent publication in Nature Medicine, Dean Tang, PhD, his colleagues and collaborators describe the emerging role of miR-34a in regulating cancer stem cells, a discovery that could lead to new therapies for prostate cancer. Their comprehensive study, led by Ms. Can Liu, a graduate student in the Graduate School of Biological Science, found that miR-34a is prominently underexpressed in CD44+ prostate cancer cell populations. "CD44 has long been linked to promotion of tumor development and, especially, to cancer metastasis," Tang said. "Many cancer stem cells express high levels of this surface adhesion molecule. Another significant finding from our study is identifying CD44 itself as a direct and functional target of miR-34a." The expression of miR-34a is regulated by p53, and miR-34a is known to induce apoptosis, cell-cycle arrest or senescence when introduced into cancer cells. In a series of experiments with cell lines, human xenograft tumors in mice and primary human prostate cancer samples, the researchers demonstrated that miR-34a inhibits prostate cancer stem cells by suppressing CD44. These findings are the first to profile a microRNA expression pattern in prostate cancer stem cells and also establish a strong rationale for developing the microRNA miR-34a as a new treatment option for prostate cancer. "There are many companies developing microRNA-based drugs," Tang said. "Delivery of miRNAs is a challenge, but the field is moving fast through the preclinical stage."

Alexander Prokhorov's Web-Based Anti-Smoking Program is now bilingual Center Member, Alexander V. Prokhorov who is a Professor in the Department of Behavioral Science at MD Anderson, also serves as director of e-Health Technology, a program funded by the Duncan Family Institute for Cancer Prevention and Risk Assessment that works with scientists to integrate technology into research projects that help people adopt healthier lifestyles. ASPIRE (A Smoking Prevention Interactive Experience), which is a popular web-based teen prevention and smoking-cessation program, now speaks Spanish. The 10 year old program advances the institution's national commitment to help prevent teens from smoking or help them quit before it becomes a lifelong addiction. ASPIRE is an evidence-based tobacco prevention and cessation website for middle and high school students. The site integrates interactive media, customized messages, graphics, animations and streaming videos. Since its inception in 2004, over 40,000 hits have been registered on the ASPIRE website from both national and international IP addresses. Currently the program has 21 states enrolled and more than 6,000 students have used ASPIRE as part of a formal school curriculum that features a tobacco-related knowledge pre- and post-test as required by schools. ASPIRE, now funded by the Tobacco Settlement Funds to the State of Texas, will continue to be a free resource to school

districts, state health departments, teachers and parents nationwide. Anyone can access the program by visiting http://www.mdanderson.org/aspire.

***Xifeng Wu* was named chair of the MD Anderson Department of Epidemiology**

Dr. Wu is also the Director of the newly established Center for Translational and Public Health Genomics. She received her medical degree from Shanghai Medical University in 1984 and her Ph.D. in epidemiology from The University of Texas School of Public Health in 1994. She joined MD Anderson in 1995 as an assistant professor and had risen through the faculty ranks to full professor by 2004. Her research focuses on using a molecular epidemiological approach to develop and validate genetic biomarkers for cancer risk assessment and for clinical outcome prediction via a variety of epidemiologic and molecular techniques including genetics, epigenetics, cytogenetics, and computational biology. She is currently principle investigator of 10 large NCI funded epidemiologic projects. Dr Wu has published over 250 peer-reviewed research articles and has authored over 30 invited articles and book chapters. She is also passionate about training the next generation of scientists. For her efforts and excellence as a mentor this April she was awarded the Chamberlain Mentor Award. This award is presented annually by the MD Anderson Postdoctoral Association to acknowledge a faculty member who, through demonstrated guidance of postdoctoral fellows, exemplifies the fundamental mentoring qualities of teacher, coach and sponsor.

Communication is Key

The Center will be revamping its communication strategies to better communicate with members and the community. The new strategy will include a **new webpage** that will be designed to minimize clutter and maximize usability and easy navigation to relevant content. The Administrative Core will also be moving to publishing just two newsletters a year and utilizing a **blog** to which members can subscribe to receive timely relevant information that will be disseminated more efficiently. A **calendar of events** will also be available on the revamped website that will make planning for and attending seminars and workshops easier than ever. The Administrative Core is currently in the planning phase and welcomes your feedback on how to best communicate with you.

Recognizing Excellence

Alexander Prokhorov - is the 2011 recipient of the American Society of Preventive Oncology Joseph Cullen Award for Excellence in Tobacco Research.

Karen Vasquez was named the Environmental Mutagen Society 2010 Student Education Award Recipient. This award is conferred in recognition of outstanding contributions in the area of student teaching and mentorship.

Dean Tang was awarded a three year Lecturing Professorship at Wuhan University located in China.

Congratulations on grants!

Cheryl Walker and ***Stephen Hursting*** were awarded an NIEHS R21 grant to study “Reversing the Effects of Developmental Reprograming”

Congratulations to the Pilot Project Awardees

George Delclos - Airway Fungal Metabolic Profiling for 2-Pentylfuran

Collene Jeter - A Novel Transgenic Mouse Model to Study the Impact of Environmental Xenoestrogens on Slow-Cycling Prostate Stem Cell Susceptibility to Transformation

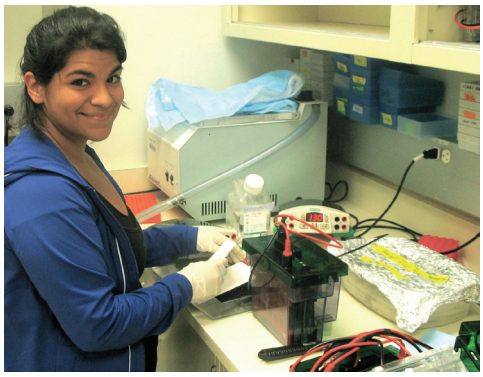
Michael C. MacLeod - Association Between Polymorphisms in the Promoter of the ATF3 Gene, Breast Cancer, Hodgkin Lymphoma, and ATF3 Expression

Kei-ichi Takata - Role of DNA polymerase N in the Fanconi Anemia Pathway Required for Defense Against Environmental Agents

Guilang Wang - Cytosine Methylation and DNA Structural Alterations in Chromosome Instability

COEC Spotlight – Gearing Up for Summer Programs

Summer Research Program – COEC has recruited 11 undergraduate students and 5 high school students for the 2011 research program. Ten (10) students will be working at the Science Park, 4 at the University of Texas at Austin, College of Pharmacy, and 2 at the Keeling Center for Comparative Medicine and Research in Bastrop. The program is scheduled to start June 6th and end August 12th. The program includes a number of educational and social activities, including a lunch lecture series. Founded and still currenlty organized by the post-doctoral fellows at Science Park, the weekly lunch lectures provide an introduction to basic scientific topics such as carcinogenesis, animal models, molecular biology, flow cytometry and emerging analytic techniques. Student interns learn about the ongoing research at each the campuses and the fellows have an opportunity to teach. On the last day, interns will participate in the Summer Scientific Symposium where they present a 10-minute talk describing their research results to an audience of their peers along with faculty, trainees and staff.



Yvette Ybarra in Dr. Walker's lab during 2010 program.

MENTORS Project - The goals of the MENTORS (Model Environmental Networks to Optimize Rural Science) Project are to enhance Science, Technology, Engineering and Math (STEM) education and career development, in order to better prepare high school students for post-secondary education and training. It is part of our effort to recruit the next generation of EHS researchers and health care providers. To accomplish the goals, the project fosters interactions between high school students and biomedical research scientists through onsite field experiences, job shadows and the summer High School Research Program (HSRP). The MENTORS project includes 1-2 day field experiences that provide an authentic perspective of the range of EHS, public health, medical and/or and research career opportunities. Students learn about the continuum of basic, translational and clinical research aimed at revealing fundamental disease mechanisms and developing and testing new treatment and prevention strategies. A typical FE includes a scientific talk, hands-on activities, a tour of facility cores, with demonstrations of techniques and instrumentation, and a job shadow. The shadow allows students to spend 1.5-3.0 hours in the labs and to discuss careers with lab personnel, trainees and faculty. On Thursday May 5, 2011, students from Runge High School, Dr. Raymond DuBois' alma mater, visited the Science Park campus for a FE and had a chance to speak to Dr. DuBois about his career via videoconference.

Jimi Lynn Brandon provides an explanation of the Histology Core to high school students.

Summer Educator Fellows - For the past three summers, Ms. Sara Swearingen and Mr. Jason Peterson have worked with COEP staff and scientists at Science Park, to develop lessons and activities based on environmental health science. Along with Heather Reddick of the COEP, Sara and Jason presented a 3-hour short course at the annual conference of the National Science Teachers Association (NSTA), held in San Francisco. The course, entitled Young Investigators in Environmental Health Science: Challenging and Exciting Your Students With Novel, Inquiry-Based Environmental Activities, provided exciting new ways to use environmental health science "investigations" in elementary classrooms. The Young Investigator's workshop was only one of three elementary level short courses accepted for presentation at NSTA. Sara and Jason will present this workshop again at the Environmental Health Science Summer Institute (SI) (k12summerinstitute.mdanderson.org) in Austin on Thursday, July 21, 2011. At the SI, Texas teachers attend 1-2 day workshops focusing on a variety of environmental topics, such as indoor and outdoor air pollution, lead poisoning, water quality, toxicology, cancer, risk-assessment, genetics and cell biology. Workshops feature research-inspired materials from some of the nation's finest research institutions, including the NIH, Baylor College of Medicine, National Center for Atmospheric Research, Texas A&M University, MIT and many others.

Sara Swearingen and Jason Peterson presenting at NSTA.